

Claims

[c1] What is claimed is:

- 1.A pointing device for a computer comprising:
 - a magnetic field source for generating a magnetic field having a magnitude and direction proportional to a location relative to the magnetic field source that the magnetic field is measured;
 - a magnetic field sensor for measuring the magnitude and direction of the magnetic field generated by the magnetic field source at a measurement location, and outputting an electrical signal corresponding to the magnitude and direction of the magnetic field at the measurement location;
 - a flexible member connecting the magnetic field source and the magnetic field sensor such that when a force is applied to the flexible member the relative position of the magnetic field sensor with respect to the magnetic field source is changed in a direction of the force by a distance proportional to the force;
 - a processor for receiving the electrical signals output by the magnetic field sensor, and generating a corresponding location signal of the pointing device; and
 - a transmission system for conveying the location signal from the processor to the computer.

[c2] 2.The pointing device of claim 1 wherein the magnetic field source comprises a permanent magnet or solenoid.

[c3] 3.The pointing device of claim 2 wherein the magnetic field sensor comprises at least two hall elements each having a measuring axis and each capable of measuring the magnitude of the magnetic field at the measurement location in a direction of the measuring axis, the hall elements arranged so that the measuring axes are not parallel.

[c4] 4.The pointing device of claim 2 wherein the magnetic field sensor comprises a single hall element having at least two mutually perpendicular measuring axes capable of measuring the magnitude of the magnetic field directions of each measuring axis at the measurement location.

[c5] 5.The pointing device of claim 2 wherein the magnetic field sensor comprises at

least two magnetoresistors each having a measuring axis and each capable of measuring the magnitude of the magnetic field at the measurement location in a direction of the measuring axis, the magnetoresistors arranged so that the measuring axes are not parallel.

- [c6] 6.The pointing device of claim 1 wherein the flexible member is a damped spring that can bend, compress, and extend.
- [c7] 7.The pointing device of claim 1 wherein the flexible member is a wire that can bend resiliently.
- [c8] 8.The pointing device of claim 1 further comprising at least a button.
- [c9] 9.The pointing device of claim 8 wherein the button is mechanically connected to the flexible member and is capable of changing the relative position of the magnetic field sensor with respect to the magnetic field source, and thus modifying the electrical signal output by the magnetic field sensor to comprise a button signal.
- [c10] 10.The pointing device of claim 1 wherein the transmission system is a connector cable or a wireless transmission module.